TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE)

EME 2106: WORKSHOP PRACTICE

END OF SEMESTER EXAMINATION
SERIES: APRIL 2013
TIME ALLOWED: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*
- *Drawing instruments*
- *Scientific calculator*

This paper consists of **FIVE** questions.
Answer any **THREE** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One

a) State any **FIVE** possible causes of accidents in a machine shop.   **(5 marks)**

b) List any **FOUR** possible costs incurred when an accident occurs in the workshop or process hall.
                                                                              (4 marks)

c) Explain **FIVE** precautions taken to ensure machine tool safety.   **(5 marks)**

d) State **FOUR** duties of employees in maintaining safety according to Health and Safety according to Health and Safety at work Act of 1974.   **(4 marks)**

e) State **FOUR** measures to ensure proper use of hacksaw.   **(2 marks)**

Question Two

a) List **SIX** possible functions of the cutting fluids in a machine operation.   **(6 marks)**

b) List **SIX** machine operations which can be performed on a lathe   **(6 marks)**

c) State **THREE** ways of designating the size of a lathe.   **(3 marks)**

d) Figure Q2 (d) shows a part of a typical lathe.
   (i)   Name the part
   (ii)   Label the parts shown as 1, 2, 3 and 4
   (iii)   Explain the functions of parts 1 and 2   **(5 marks)**

Question Three

a) In a turning operation the work revolves at 8 revs/s while the tool has a feed of 0.2mm/rev. The works to be turned down over a length of 100mm. How long will it take to make one cut over the length of the shift>   **(5 marks)**

b) Figure Q3 shows parts of a milling machine. Label the pats shown as 1, 2, 3, 4 up to 10.   **(5 marks)**

c) By use of sketches, illustrate where the following types of files are applied:
   (i)   Flat and file
   (ii)   Three square file
   (iii)   Half round file
   (iv)   Round file   **(6 marks)**

d) Explain the difference between the **THREE** types of hacksaws blades:
   (i)   All hard blade
   (ii)   Flexible blade
   (iii)   Spring back blade   **(4 marks)**

Question Four

a) Figure Q4 shows the guide return mechanism for a shaper. Describe briefly how the reciprocating motion of the tool is obtained.   **(6 marks)**

b) Explain the operation of a **FOUR** stroke petrol engine   **(12 marks)**

c) Explain the role of camshaft in an engine   **(2 marks)**

Question Five

a) Explain how finishing operation is carried out and state the suitable files for the purposes.   **(4 marks)**

b) Explain how screw threads are produced on the bench using hand tools.   **(10 marks)**

c) Explain the difference between a reamer and a drill.   **(2 marks)**

d) Explain **TWO** main applications of screw threads in engineering.   **(2 marks)**

e) Explain how a hacksaw blade is set.   **(2 marks)**